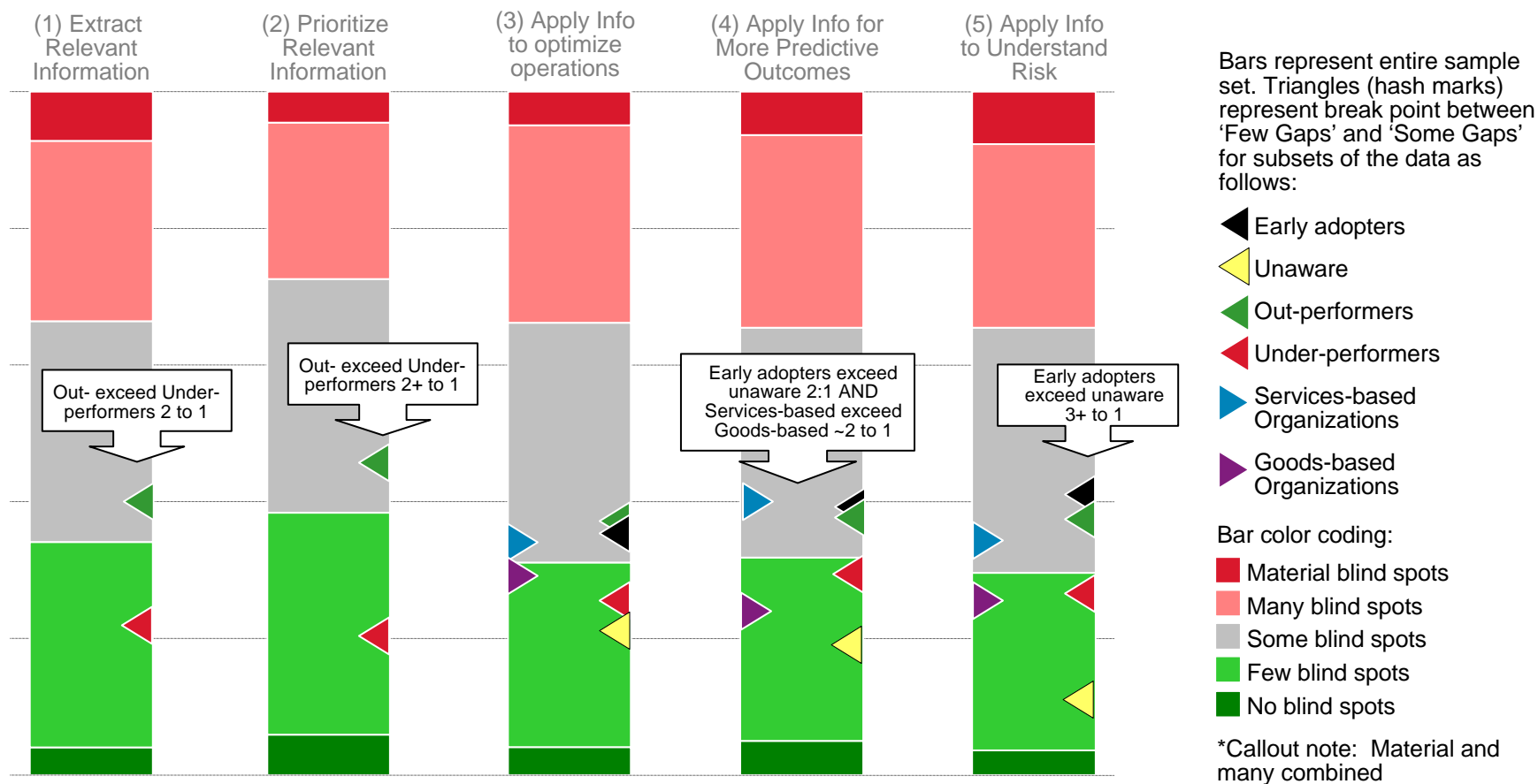# Business Analytics and Optimization

IODcty, Zürich

September 29th, 2009

Overview

New complexity creates an imperative for change	Enterprises must fundamentally change the way they work	Only IBM brings the comprehensive solutions enterprises need	Let's get started with your BAO program and initiatives
The growing velocity of the volume, variety and granularity of information is driving unprecedented complexity.	Intelligent enterprises leverage information to reach better, faster decisions, optimal actions, and more predictable outcomes.	IBM is creating a new GBS service line - **Business Analytics and Optimization** - to bring together world class capabilities for our clients.	Let's work together to determine priorities, assess your situation, identify new opportunities, and begin delivering value.

There is lots of room for improvement across the board with some big differences in the details

To what extent do you feel that your organization is operating with major "blind spots" — gaps or lack of trust in information — in regard to the following areas?
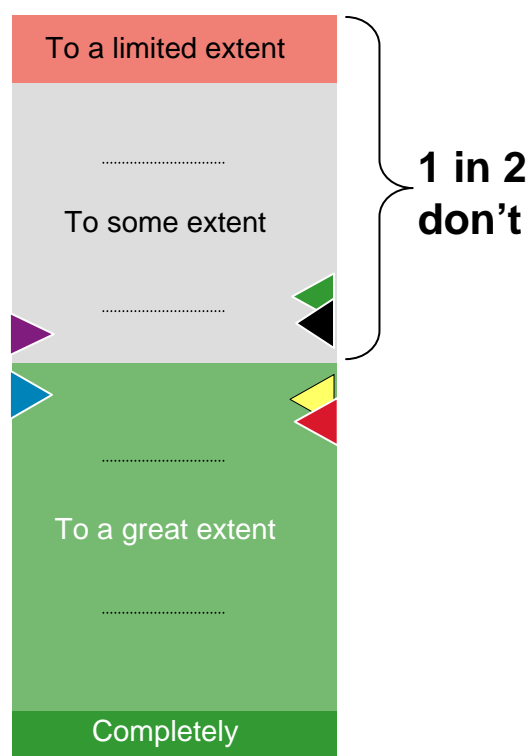
(1) Extract Relevant Information	(2) Prioritize Relevant Information	(3) Apply Info to optimize operations	(4) Apply Info for More Predictive Outcomes	(5) Apply Info to Understand Risk

Out- exceed Under-performers 2 to 1

Out- exceed Under-performers 2+ to 1

Early adopters exceed unaware 2:1 AND Services-based exceed Goods-based ~2 to 1

Early adopters exceed unaware 3+ to 1

Bars represent entire sample set. Triangles (hash marks) represent break point between 'Few Gaps' and 'Some Gaps' for subsets of the data as follows:

◀ Early adopters

◁ Unaware

◢ Out-performers

◀ Under-performers

▶ Services-based Organizations

▶ Goods-based Organizations

Bar color coding:

■ Material blind spots
■ Many blind spots
■ Some blind spots
■ Few blind spots
■ No blind spots

*Callout note: Material and many combined

3

One in two organizations neither connect the dots internally nor share much with external partners and suppliers

Share critical information with partners and suppliers for mutual benefit? [1]

Not at all
To a limited extent
....
To some extent
....
To a great extent
....
Completely

3 in 5 don't
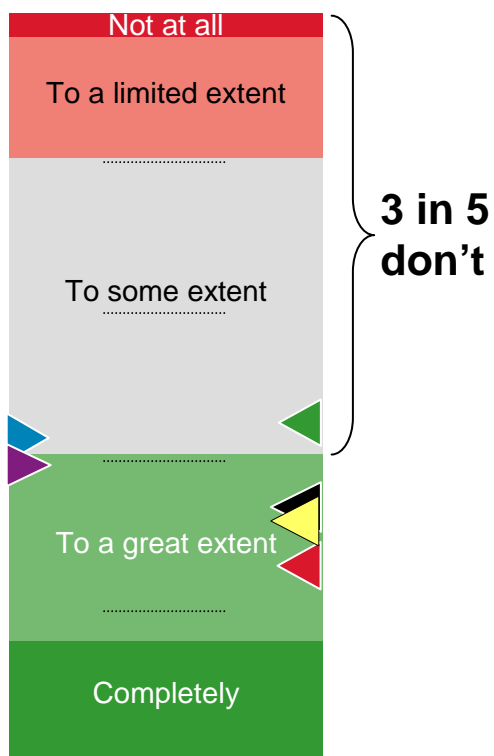
Have sufficient information from across your organization to do your job? [2]

To a limited extent
....
To some extent
....
To a great extent
....
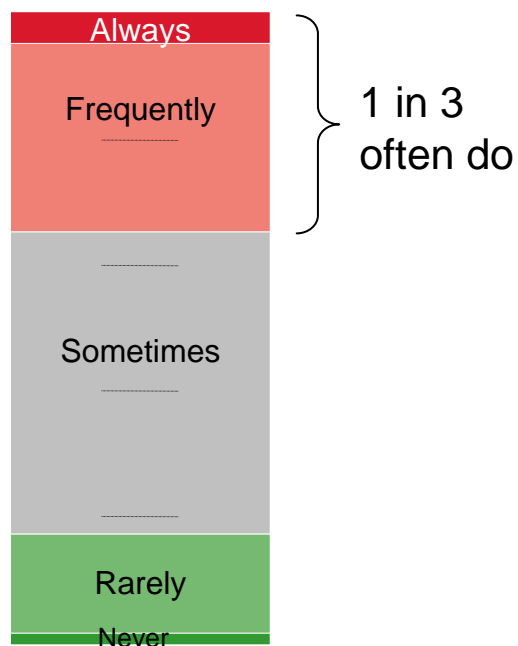Completely

1 in 2 don't

Bars represent entire sample set. Triangles (hash marks) represent break point between 'To a Great Extent' and 'To Some Extent' for subsets of the data as follows:

◀ Early adopters
◁ Unaware
◀ Out-performers
◀ Under-performers
▶ Services-based Organizations
▶ Goods-based Organizations

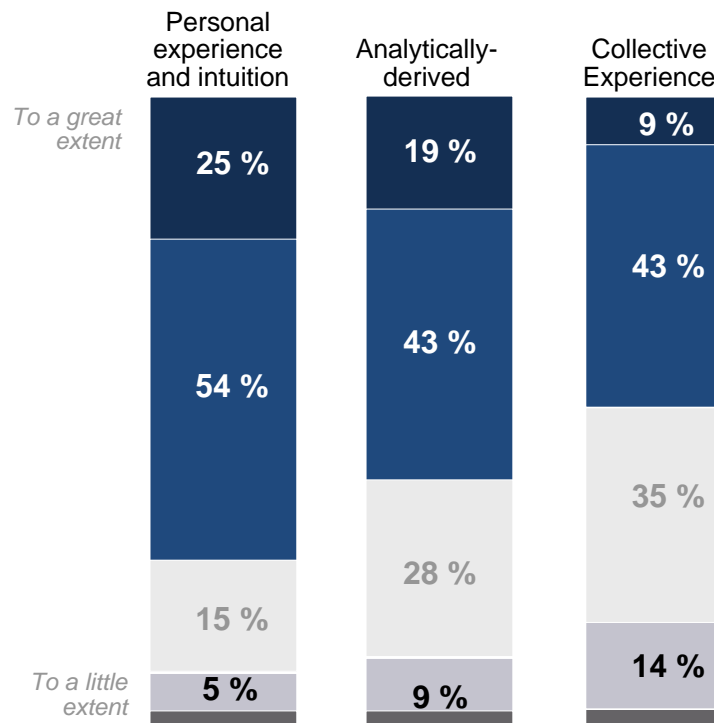# Lack of information forces decision makers to be most reliant on their intuition

How often have you made major decisions with incomplete information or information you don't trust? [1]
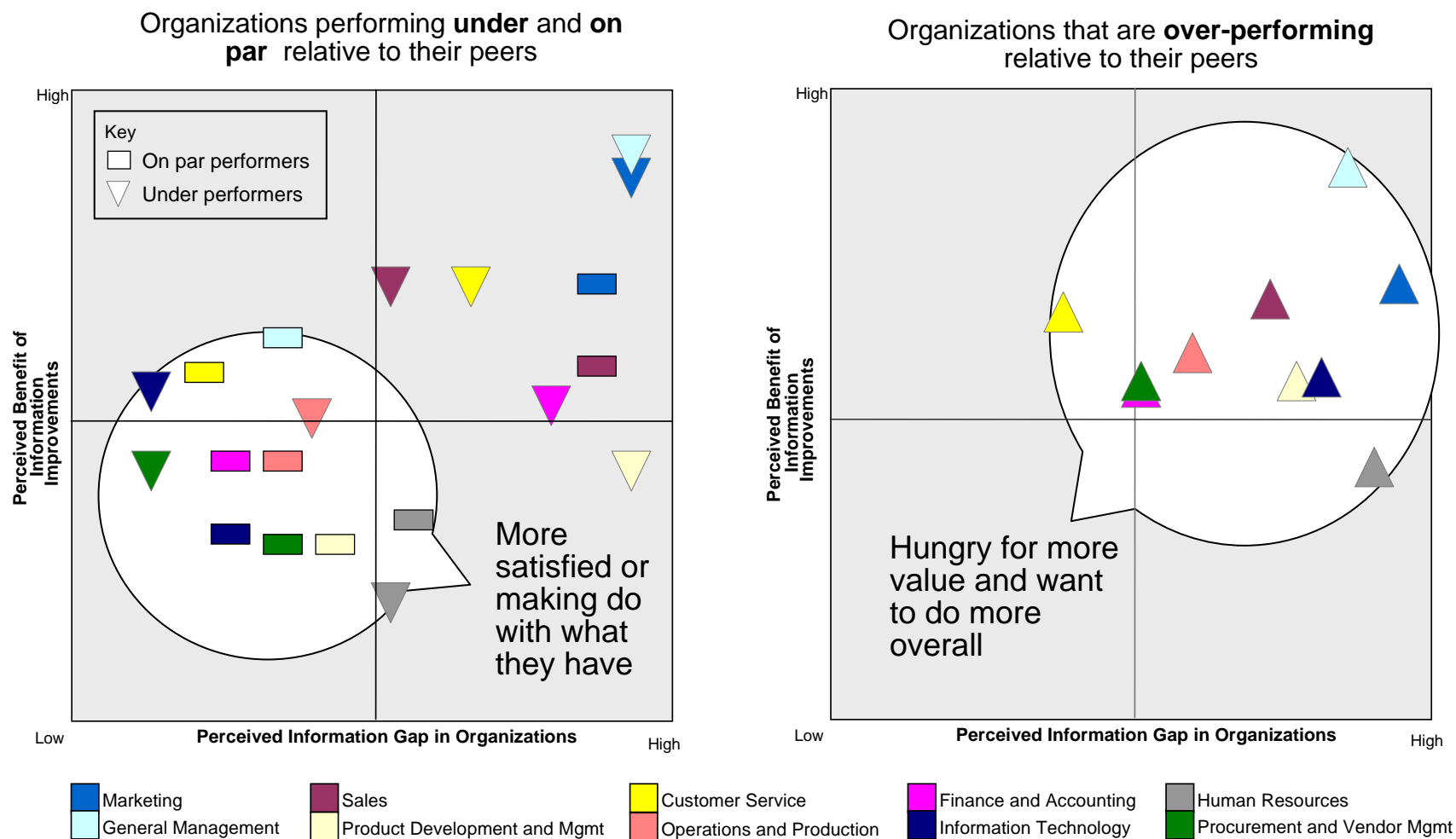
| Always |
| Frequently | } 1 in 3 often do
| Sometimes |
| Rarely |
| Never |

To what extent do you make business decisions based on the following factors? [2]

	Personal experience and intuition	Analytically-derived	Collective Experience
To a great extent	25 %	19 %	9 %
	54 %	43 %	43 %
	15 %	28 %	35 %
To a little extent	5 %	9 %	14 %

"Guestimation" has worked up to a point (arguably we've passed it), but is prone to serious failure in new circumstances, greater complexity and higher speed

Enterprise-wide, over-performers recognize the value of information improvements and want more

Organizations performing **under** and **on par** relative to their peers

Organizations that are **over-performing** relative to their peers

Key
☐ On par performers
▽ Under performers

High

Perceived Benefit of Information Improvements

More satisfied or making do with what they have

Perceived Information Gap in Organizations

Low   High

Hungry for more value and want to do more overall

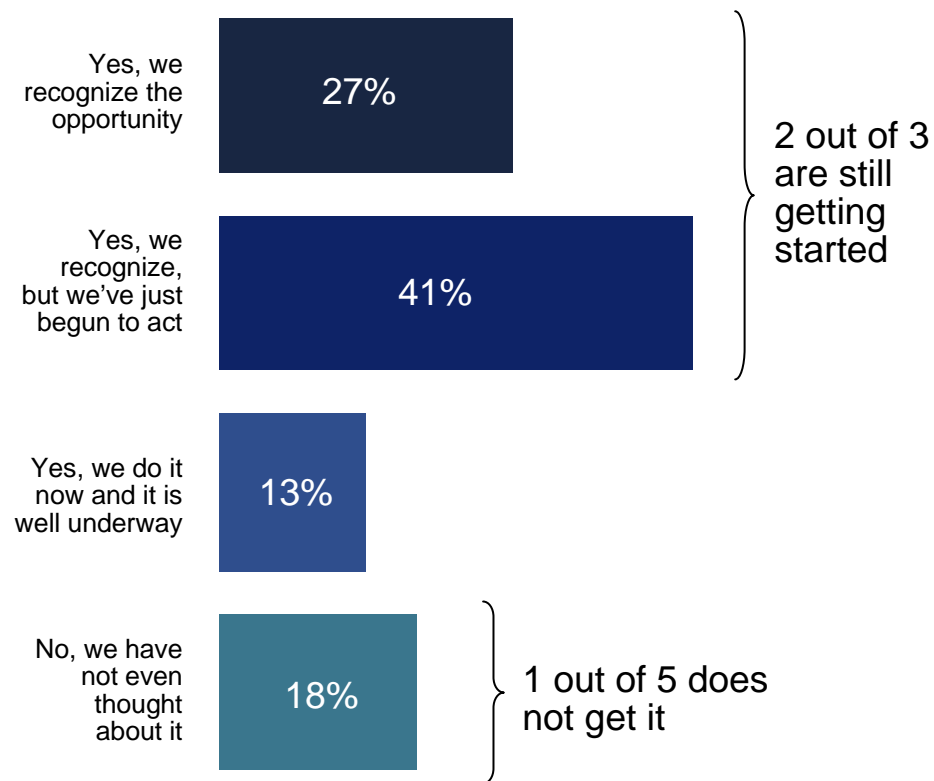| ■ Marketing	■ Sales	■ Customer Service	■ Finance and Accounting	■ Human Resources
■ General Management	■ Product Development and Mgmt	■ Operations and Production	■ Information Technology	■ Procurement and Vendor Mgmt

Source: EIU launch survey for IBM BAO, March 2009, n=225: Analysis based upon questions 4 and 8. Out-, on-par and under-performance is relative to peers.

Most organizations recognize the opportunity for analytics, but are still very early in the adoption process

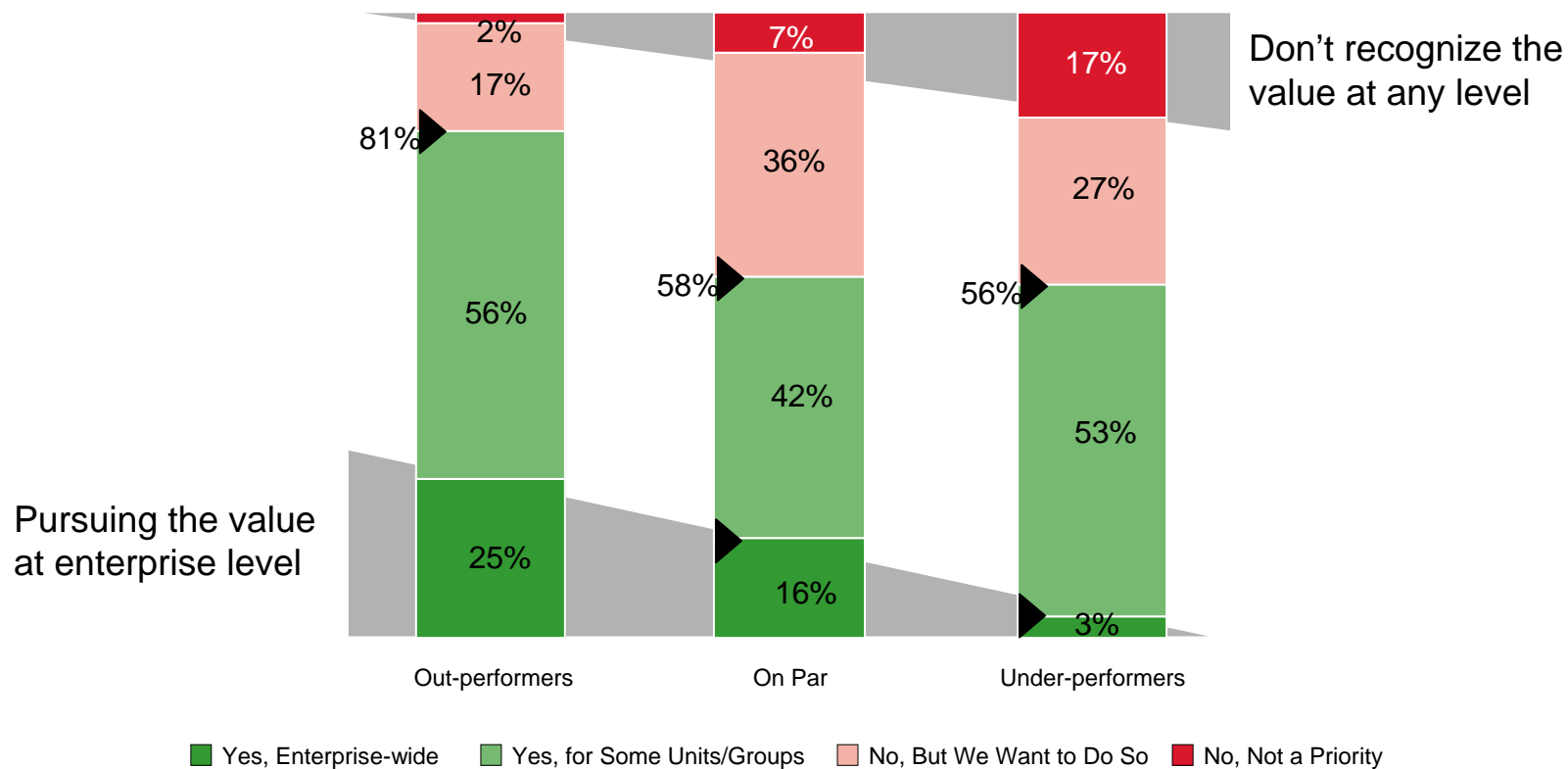**Would more predictive information drive better decisions?** [1]

| To little or no extent |
| To some extent |

Nearly 3 in 4 said yes

| To a great extent |
| Completely |
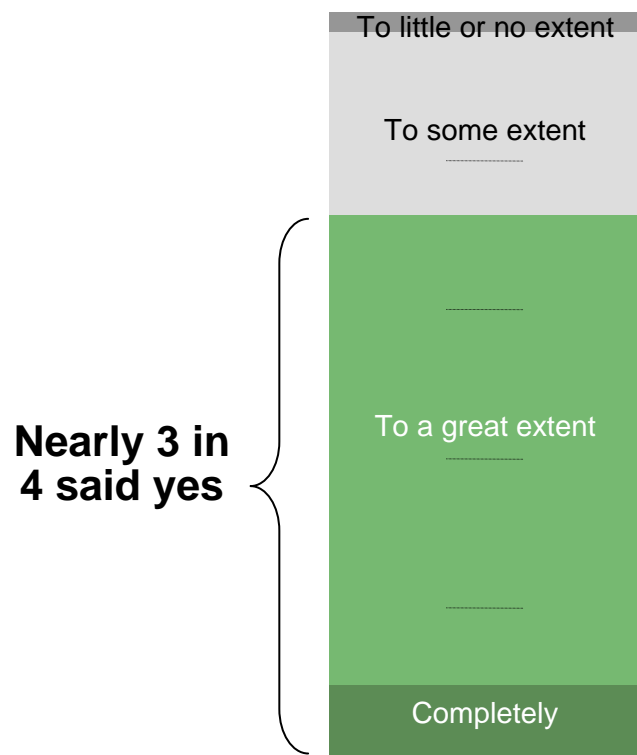
Is your organization taking advantage of new opportunities to leverage information for its advantage? [2]

Yes, we recognize the opportunity — 27%

Yes, we recognize, but we've just begun to act — 41%

2 out of 3 are still getting started

Yes, we do it now and it is well underway — 13%

No, we have not even thought about it — 18%

1 out of 5 does not get it

Out-performers recognize and pursue the value much more than On-par and Under-performers

Does your organization have a plan in place to improve all of the following: its ability to collect and analyze data, present relevant information, and empower people to act on it?

Don't recognize the value at any level

Pursuing the value at enterprise level

	Out-performers	On Par	Under-performers
No, Not a Priority	2%	7%	17%
No, But We Want to Do So	17%	36%	27%
Yes, for Some Units/Groups	56%	42%	53%
Yes, Enterprise-wide	25%	16%	3%

81%   58%   56%

■ Yes, Enterprise-wide   ■ Yes, for Some Units/Groups   ■ No, But We Want to Do So   ■ No, Not a Priority

Source: EIU launch survey for IBM BAO, March 2009, n=225: Question 10. Out-, on-par and under-performance is relative to peers.

The growing velocity of the volume, variety, and granularity of information is driving new, unprecedented complexity

Today, the processing power of the web is about equivalent to **one human brain**. By 2040, it will exceed the total processing power of **all of humanity**

Every day, **15 petabytes** of new information are being generated. This is eight times more than the information in all U.S. libraries

80% of new data growth is **unstructured content**

By 2010, the amount of digital information will grow to **988 exabytes** (equivalent to a stack of books from the sun to Pluto and back)

INFORMATION
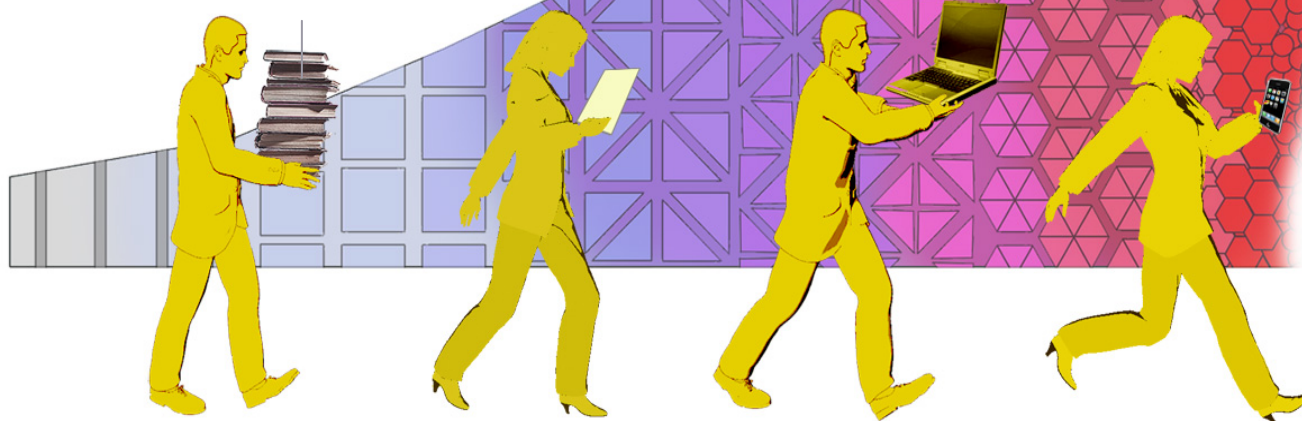
Tomorrow's issues and opportunities will be bigger and harder to solve in ways that defy our imaginations today
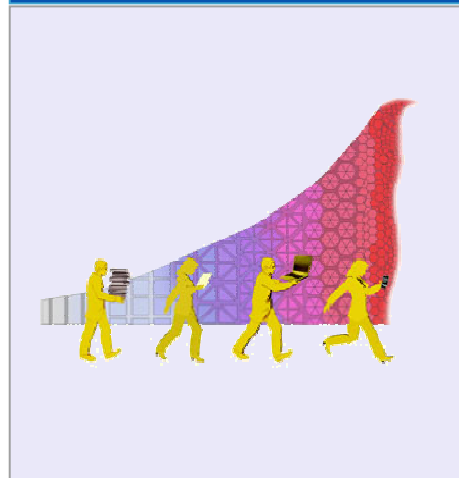
Timelines for action will be compressed beyond current ability to respond

We are approaching a "do or die" moment: enterprises that act will survive to prosper, and those that don't will be washed away

* Source: TED 2007: Predicting the Next 5000 Days of the Web. IBM analysis

Overview

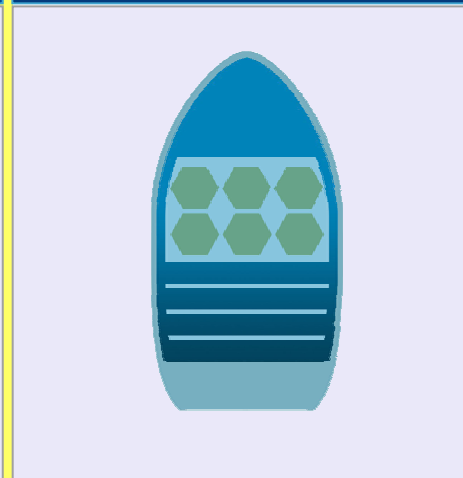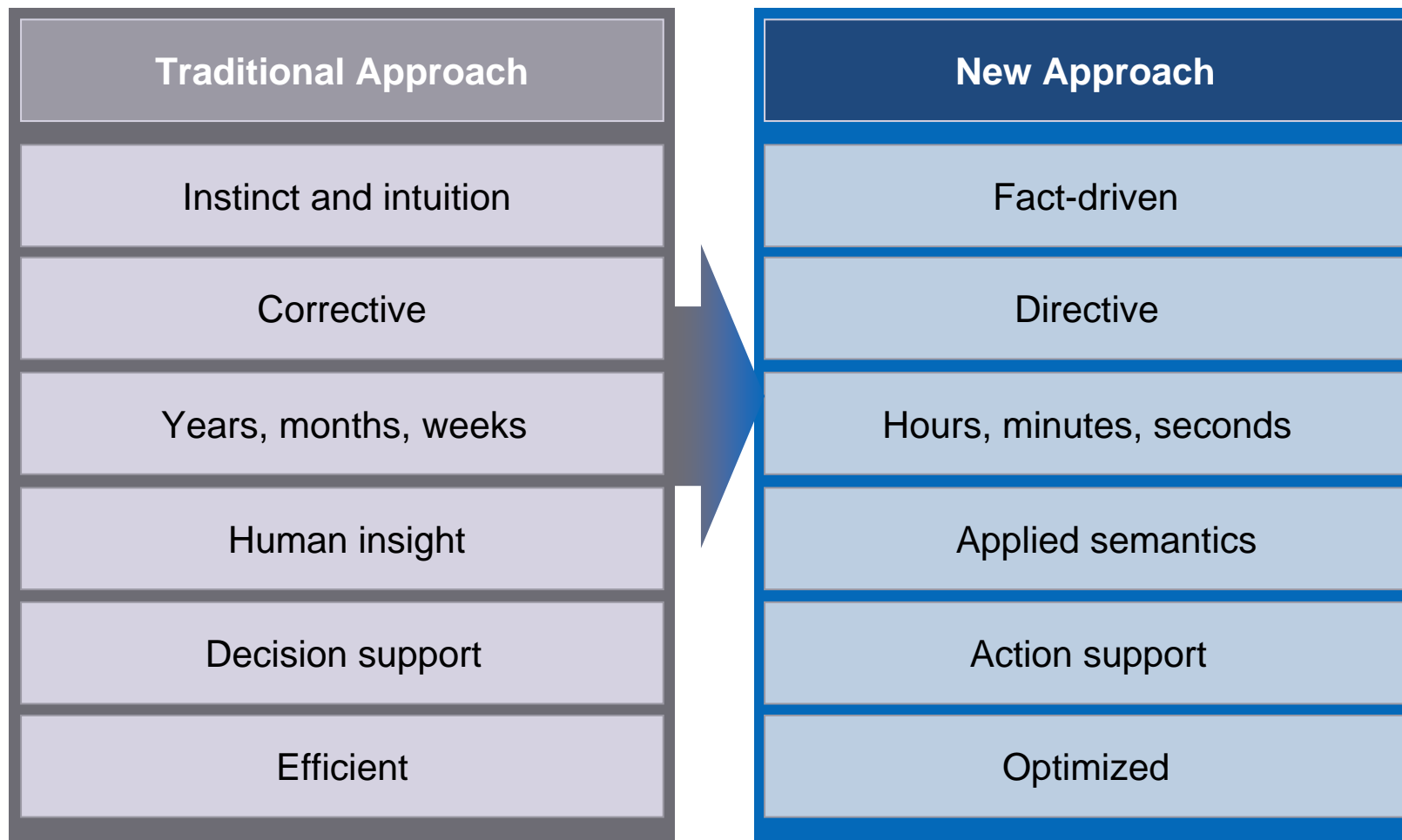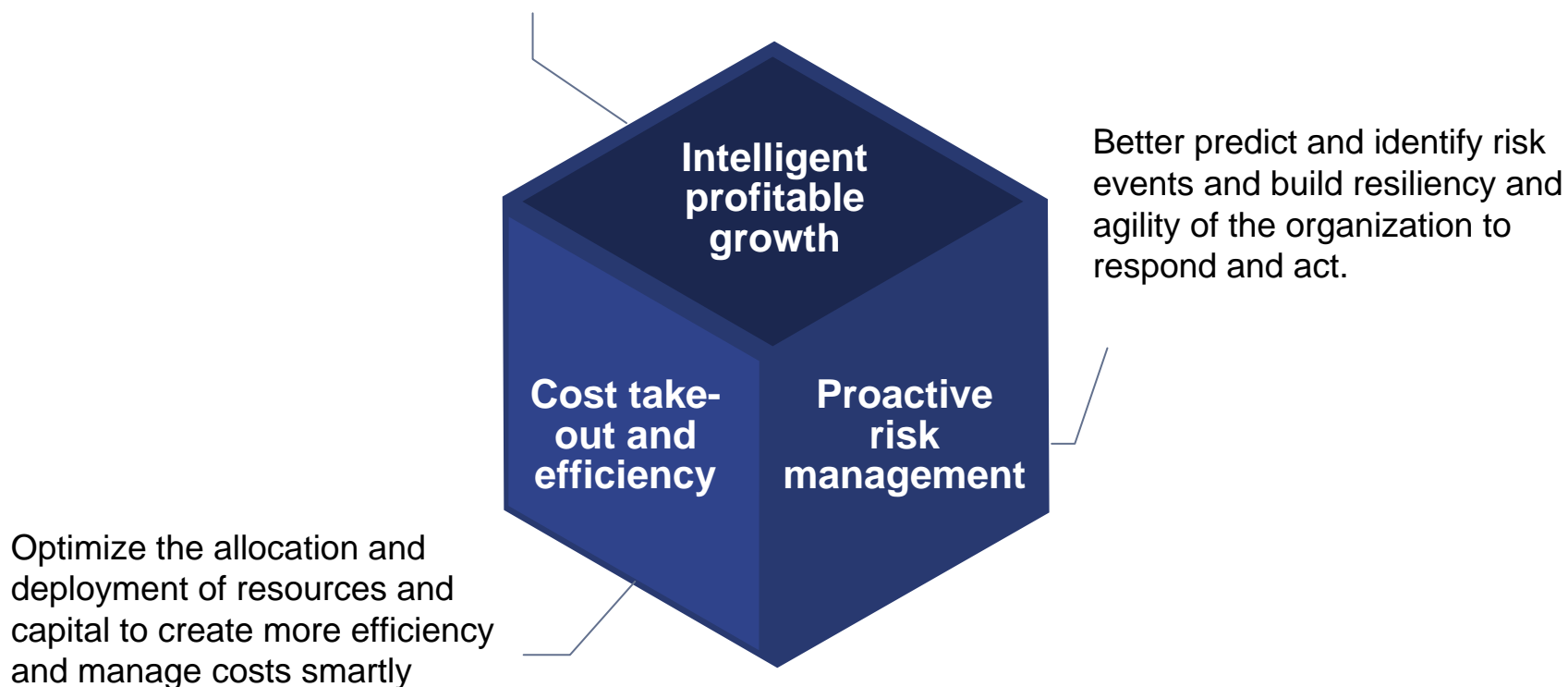| New complexity creates an imperative for change	Enterprises must fundamentally change the way they work	Only IBM brings the comprehensive solutions enterprises need	Let's get started with your BAO program and initiatives
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Organizations will need to adopt new ways of working to improve speed to insight and speed to impact

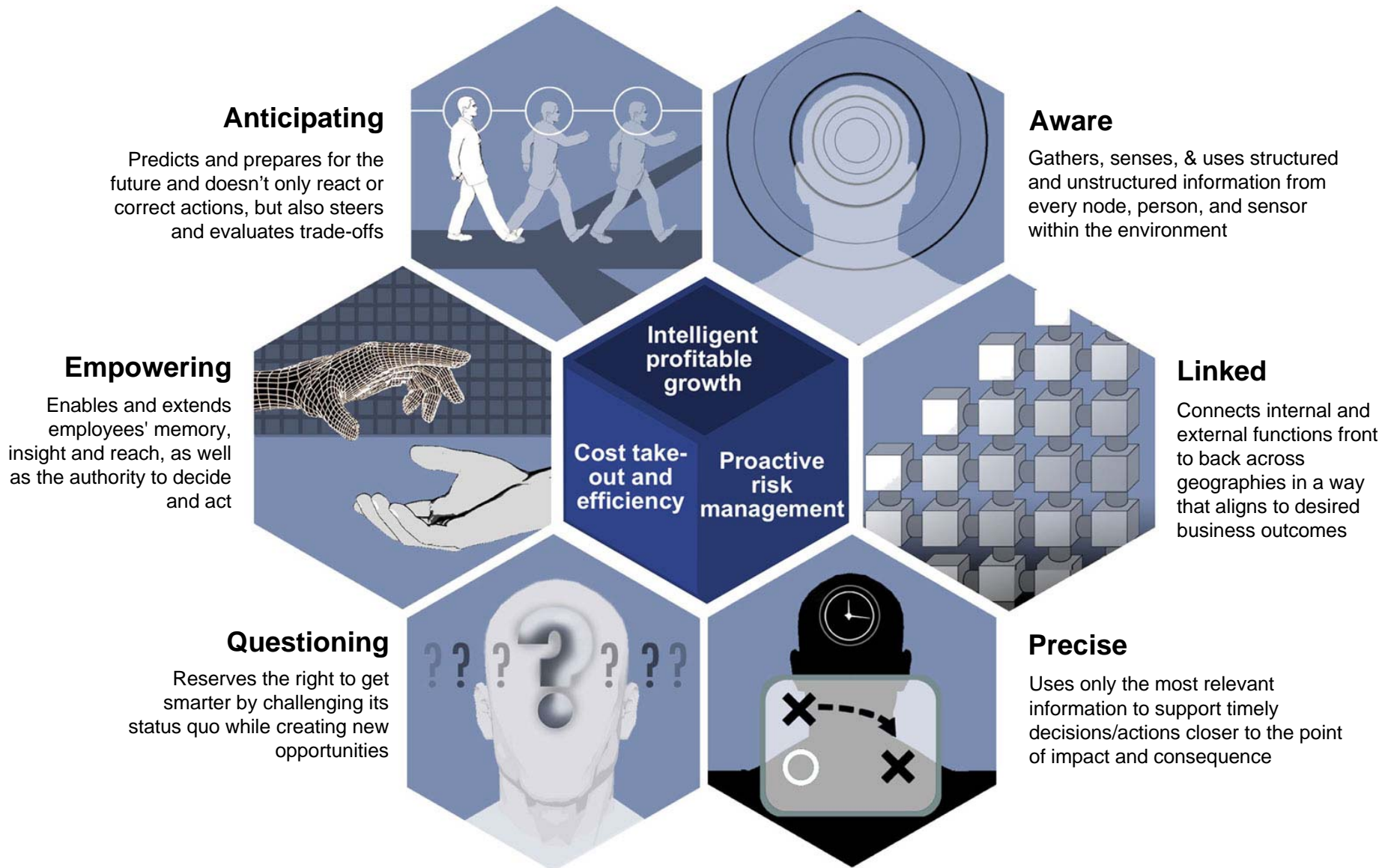| Traditional Approach	New Approach
Instinct and intuition	Fact-driven
Corrective	Directive
Years, months, weeks	Hours, minutes, seconds
Human insight	Applied semantics
Decision support	Action support
Efficient	Optimized

The value is immediate and strategic for the smarter organization

Improve opportunities for growing customers, improving relationships, identifying new markets, and developing new products and services

Better predict and identify risk events and build resiliency and agility of the organization to respond and act.

Intelligent profitable growth

Cost take-out and efficiency

Proactive risk management

Optimize the allocation and deployment of resources and capital to create more efficiency and manage costs smartly

Different organizations may identify different priorities for business analytics

The intelligent enterprise is…

Anticipating

Predicts and prepares for the future and doesn't only react or correct actions, but also steers and evaluates trade-offs

Aware

Gathers, senses, & uses structured and unstructured information from every node, person, and sensor within the environment

Empowering

Enables and extends employees' memory, insight and reach, as well as the authority to decide and act

Linked

Connects internal and external functions front to back across geographies in a way that aligns to desired business outcomes

Intelligent profitable growth

Cost take-out and efficiency

Proactive risk management

Questioning

Reserves the right to get smarter by challenging its status quo while creating new opportunities

Precise

Uses only the most relevant information to support timely decisions/actions closer to the point of impact and consequence

Overview

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GBS Business Analytics and Optimization capabilities will provide speed to insight and speed to Impact

Predictive Analytics and Optimization

IBM Research, algorithms and advanced mathematics assets, methods and capability to create predictive analytics and business optimization.

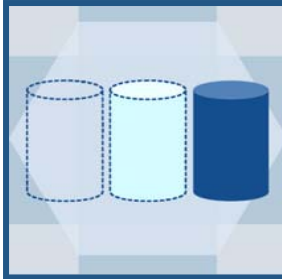**Foundational Business Intelligence and Advanced Analytics**

World class technology, unparalleled techniques and intellect applied to your business issues
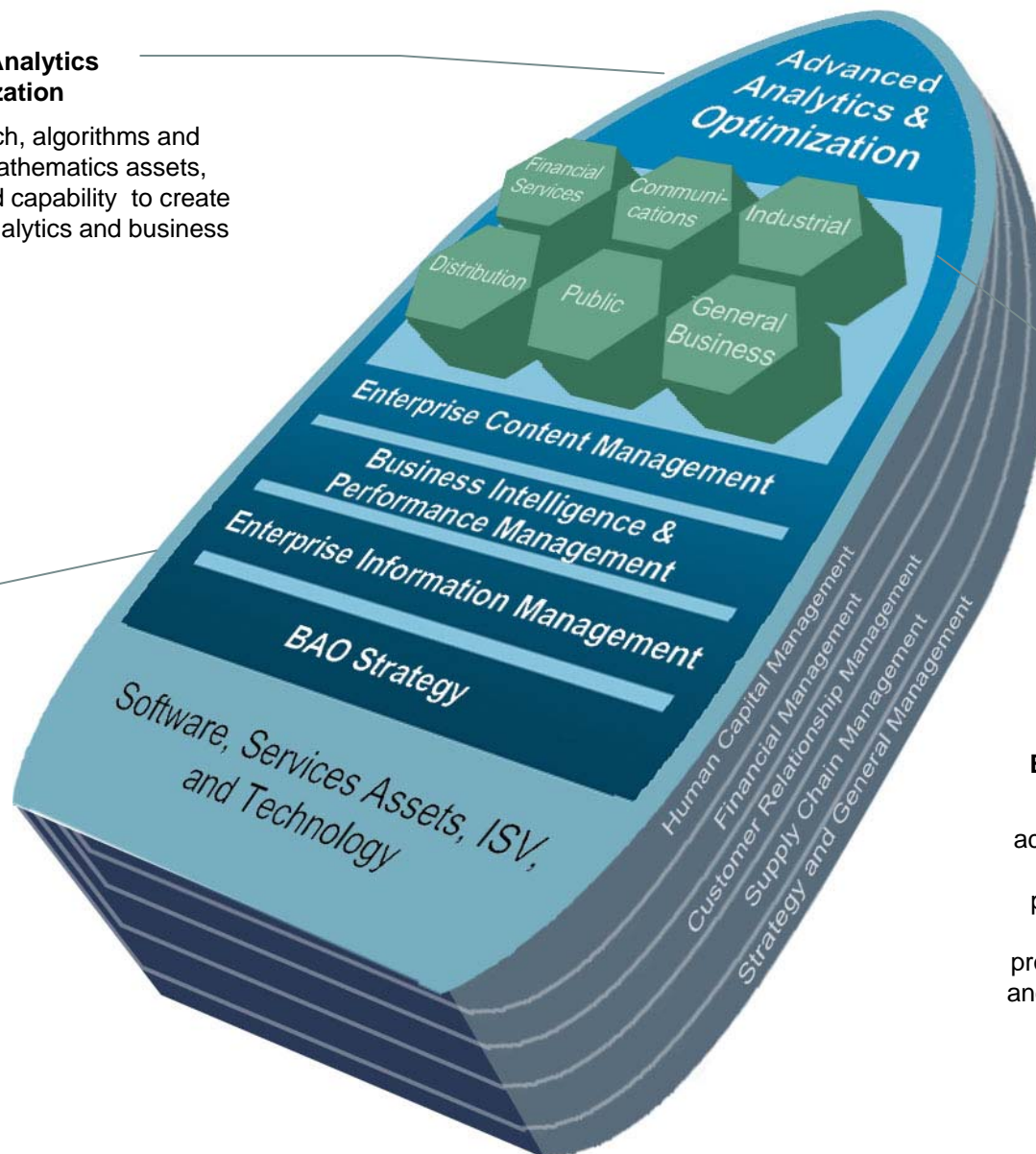
Industry and Business Solutions

Industry models, accelerators and assets that instrument key processes to provide revenue growth, proactively manage risk, and create efficiency and cost take-out

Advanced Analytics & Optimization

Financial Services
Communications
Industrial
Distribution
Public
General Business

Enterprise Content Management

Business Intelligence & Performance Management

Enterprise Information Management

BAO Strategy

Software, Services Assets, ISV, and Technology

Human Capital Management
Financial Management
Customer Relationship Management
Supply Chain Management
Strategy and General Management

Business Analytics & Optimization: Competencies and Offerings (alternate)

BAO Strategy

- BAO Strategy and Roadmap
- BAO Process Improvement
- BAO Governance

Business Intelligence & Performance Management

- Dashboards & Scorecards
- Planning, Budgeting, & Forecasting
- Business Analytics & Reporting

Advanced Analytics and Optimization

- Advanced Analytics
- Analytic Applications
- Predictive Modeling
- Business Optimization
- Visualization

Enterprise Information Management

- Data Integration
- Data Quality
- Data Architecture
- Master Data Management

Enterprise Content Management

- Document & Records Management
- Web 2.0 / Web Content Management
- Digital Asset & Rights Management
- Archiving & Record Management

BAO will address critical client needs through big plays in key areas

Advanced Customer Insight

- Limited access to customer data
- Limited view of unstructured information
- No view of Customer Profitability

- Need for Customer Loyalty
- Need for Revenue Assurance
- Need for Cost Reduction

- Duplicated Data
- Need Platform for Growth
- Need Data Simplification
- Need for Cost Take Out
- Siloed Data
- Complexity due to Acquisitions
- Inconsistent Reporting

- Need for risk transparency and advanced modeling techniques
- Losses due to unmanaged Risk
- High rates of Fraud and Abuse
- Increased regulatory oversight
- Limited view of customer and counterparty credit risk

Intelligent profitable growth

Efficiency and cost take-out

Proactive risk management

Analytics and Data Optimization

Risk and Fraud Analytics

Extending our existing portfolio of industry-based solutions and building additional big plays are our highest priorities

Information Intensive Applications…GBS Initial Solution Set

Cross Industry	Financial Services	Public	Distribution	Industrial	Communications
Financial Performance Management Human Capital Management Supply Chain Management Customer Relationship Management	• Customer Care & Insight • Customer Data Management Solution • Data Integration Solution • Fraud & Abuse Management Solution • Credit Risk Performance • Risk Insight • Identity Risk & Investigation • Insurance Executive Dashboard	• Healthcare Analytics • Member 360 • Crime Information Warehouse • CFO Dashboard • Tax Audit & Compliance • Customs Border Risk Management • Fraud & Abuse Management • START (ARRA/Stimulus) • Insight for Schools / Education Perf. Mgmt.	• Retail Performance Analytics • Life Sciences State Spend • CP Demand Driven Replenishment • CP Trade Promotion Optimization • CRM Analytics for Airlines • Loyalty Identification Focused Targeting • Virtual Command Center • Supply Chain Optimization Workbench	• Common Quality Framework / Warranty Analytics • Petroleum BPM • Production Design and Operations Scheduling • Dynamic Inventory Optimization (DIOS) • Sense & Respond • Integrated Operations Solution	• Loyalty Identification Focused Targeting (LIFT/CELM) • Telco Customer Intelligence • M&E Advertising Analytics • Consumer Analytics • Enterprise Metadata Management • Enterprise Media Library

Business Analytics and Optimization Platform

Performance Management & Analysis

- Dashboards, Scorecards,
- OLAP, Ad-hoc Query & Analysis
- Production Reporting

Advanced Analytics

- Time-series, Cluster & Pattern-based Mining
- Natural Language Text Analytics,
- Entity Analytics, Social Analytics, Streaming Analytics…
- Mathematical Optimization
- Collaborative Decisioning
- Visual Decisioning

Trusted Information Platform

Information Integration and Master Data Management

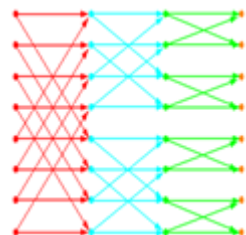**Enterprise Content Management**

Data Warehouse and Other Data Management

BAO extends BI and IOD capabilities with a focus on applied research in a diversity of new and emerging areas…
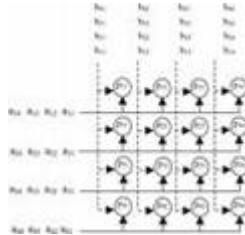
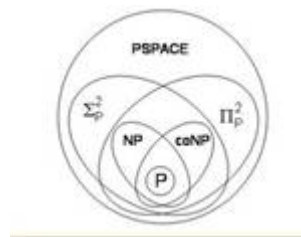*IBM Research: Over 40 years of significant contributions to the field of mathematical sciences*
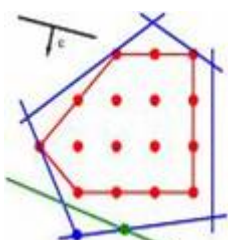
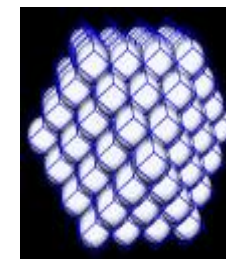**Integer Programming**

Fast Fourier Transform

Parallel computing

Foundations of Complexity

Complexity of reals
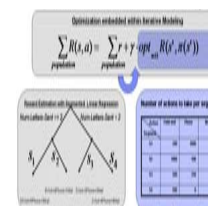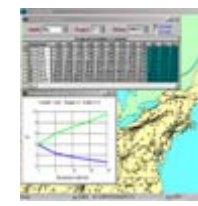
Lattice based Cryptography

Adversarial Queueing

Trackpoint

Priority Encoding

Fractals

Data Mining

U.S. National Drought Atlas

Workforce
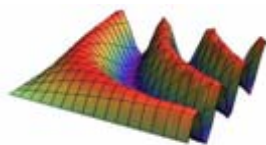
MINLP

OSL

Supply Chain Optimization
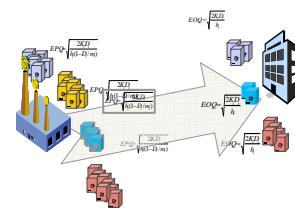
Supply Chain Carbon Management

Mfg Yield Improvement
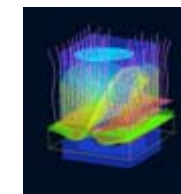
Geological Processes Modeling

Overview
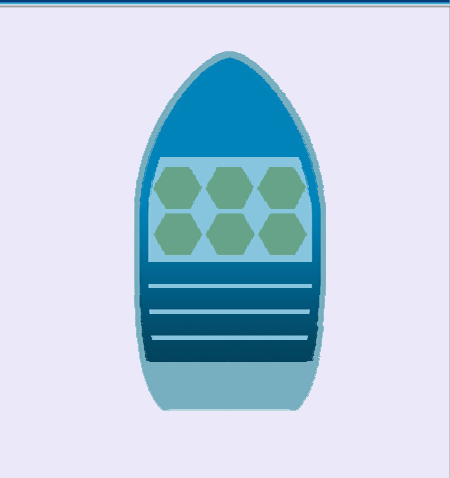
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Getting started

IBM offers simple ways to continue the conversation and discover how business analytics and optimization works for your organization.
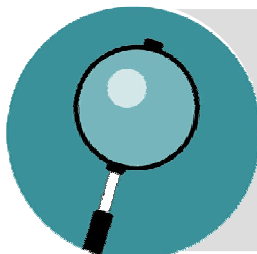
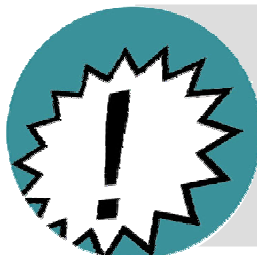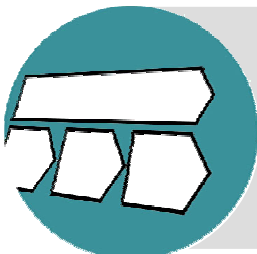|		
Prioritization and readiness planning	Assess current business analytic environment and determine priorities for future enterprise information vision	*"We're not sure what our top priorities are or what we should be doing next"*
In flight portfolio analysis and planning	Examine existing business analytic programs or capabilities and determine improvements and larger BAO enterprise vision.	*"We have programs in place and need to know how they will work in the big picture"*
Opportunity exploration	Identify possible innovations and opportunities within existing or desired information assets	*"We have an untapped data asset that could be turned into something valuable"*
BAO concentrated workstream	Get started on immediate BAO projects and solutions for known, identified analytic priorities	*"We know the solution we need and we need to get it done right"*

Contact

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Leader BAO Services Alps

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Refer the IBM Webpage:
http://www-935.ibm.com/services/ch/bcs/bao/
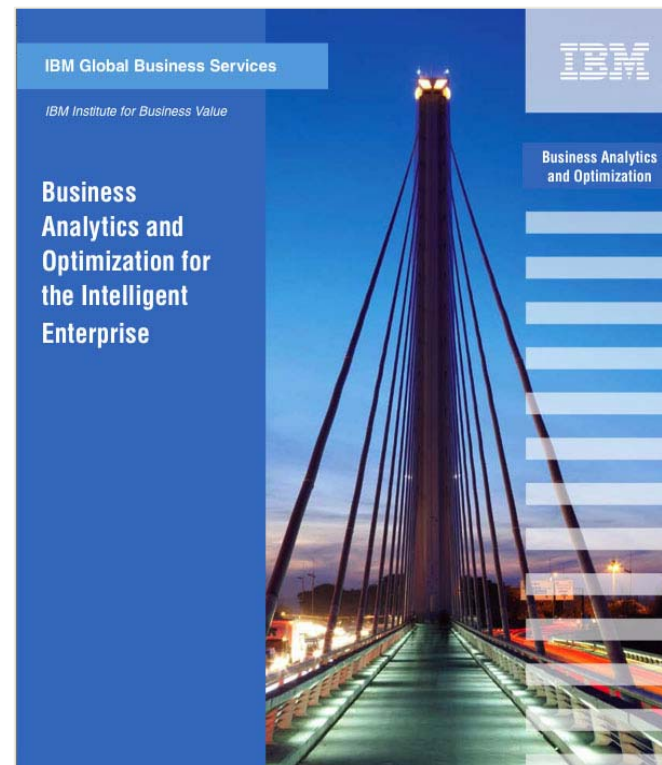
IBM report surveyed of 225 business leaders worldwide
Business Analytics and Optimization for the Intelligent Enterprise, April 2009.
http://www-935.ibm.com/services/us/gbs/bus/pdf/gbe03211-usen-00.pdf